

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 867 151 A3**

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
02.08.2000 Bulletin 2000/31

(51) Int Cl.⁷: **A61B 17/36**

(43) Date of publication A2:
30.09.1998 Bulletin 1998/40

(21) Application number: **98400687.4**

(22) Date of filing: **25.03.1998**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Omori, Shigeru**
Ashigarakami-gun, Kanagawa-ken (JP)

(74) Representative: **Joly, Jean-Jacques et al**
Cabinet Beau de Loménie
158, rue de l'Université
75340 Paris Cédex 07 (FR)

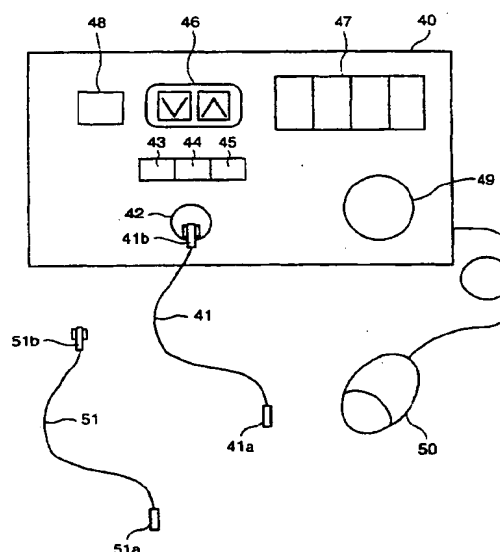
(30) Priority: **25.03.1997 JP 7238497**

(71) Applicant: **TERUMO KABUSHIKI KAISHA**
Tokyo (JP)

(54) **Medical laser irradiation apparatus**

(57) The apparatus (40) applies laser beams of two or more wavelengths, incapable of transmitting in a quartz optical fiber, through the use of an optical fiber cable. It is easy to handle and producible at a low cost, and is also capable of making irradiation through the use of a relay optical fiber cable comprising a quartz optical fiber (41). For this purpose, this apparatus is composed of a laser irradiation apparatus to output laser beams of a plurality of wavelengths capable of being transmitted by a quartz optical fiber, and two or more kinds of irradiation optical fiber cables including an optical fiber cable having a quartz optical fiber and containing a solid state laser medium and/or a nonlinear optical crystal at its tip portion. Thus, by using properly the plurality of irradiation optical fiber cables, it is possible to apply laser beams of two or more kinds of wavelengths, incapable of being transmitted by a quartz optical fiber, to an appropriate place through the use of one small-sized laser generating means.

FIG. 1



EP 0 867 151 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 40 0687

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (InCL6)
X	EP 0 325 836 A (BARD INC C R) 2 August 1989 (1989-08-02)	1,3,6,10	A61B17/36
Y	* column 6, line 41 - line 46; figure 2 * * column 10, line 12 - line 19; figure 6 *	2,4,7-9,11	
Y	US 4 580 557 A (HERTZMANN PETER) 8 April 1986 (1986-04-08)	2	
A	* column 6, line 27 - line 36; figure 3 *	5	
Y	EP 0 450 149 A (HEALTH RESEARCH INC) 9 October 1991 (1991-10-09)	4	
Y	EP 0 565 843 A (ADLAS GMBH & CO KG) 20 October 1993 (1993-10-20)	7-9	
Y	PATENT ABSTRACTS OF JAPAN vol. 007, no. 292 (E-219), 27 December 1983 (1983-12-27) & JP 58 166783 A (NIHON SEKIGAISEN KOGYO KK), 1 October 1983 (1983-10-01)	11	
A	* abstract *	1	
A	EP 0 652 614 A (TERUMO CORP) 10 May 1995 (1995-05-10)	1	
A,P	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 09, 30 September 1997 (1997-09-30) & JP 09 129949 A (TERUMO CORP), 16 May 1997 (1997-05-16) * abstract *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 June 2000	Examiner Mayer, E
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background Q: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 40 0687

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-06-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0325836 A	02-08-1989	US 4852567 A	01-08-1989
		AU 2766889 A	27-07-1989
		JP 2116384 A	01-05-1990
US 4580557 A	08-04-1986	US 4722337 A	02-02-1988
EP 0450149 A	09-10-1991	US 5074632 A	24-12-1991
		AT 138741 T	15-06-1996
		AU 641192 B	16-09-1993
		AU 6565190 A	12-09-1991
		CA 2028757 A,C	08-09-1991
		CN 1054669 A,B	18-09-1991
		CS 9100602 A	15-10-1991
		DE 69027204 D	04-07-1996
		DE 69027204 T	21-11-1996
		FI 911117 A	08-09-1991
		HU 60396 A	28-08-1992
		IL 96317 A	25-01-1994
		JP 4218002 A	07-08-1992
		KR 180558 B	01-04-1999
		PH 27174 A	02-04-1993
		PL 165353 B	30-12-1994
		PT 96934 A	29-01-1993
		ZA 9008982 A	27-05-1992
EP 0565843 A	20-10-1993	DE 4238434 A	21-10-1993
		DE 59309763 D	14-10-1999
		JP 6018750 A	28-01-1994
JP 58166783 A	01-10-1983	NONE	
EP 0652614 A	10-05-1995	JP 7106665 A	21-04-1995
		DE 69416080 D	04-03-1999
		DE 69416080 T	05-08-1999
		US 5568503 A	22-10-1996
JP 09129949 A	16-05-1997	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82